SHARP SERVICE MANUAL

CODE : 00ZXEA401USME

ELECTRONIC CASH REGISTER

MODEL XE-A401

SRV KEY : Not necessary
PRINTER : PR-45MII
(U and A version)

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PARTS GUIDE

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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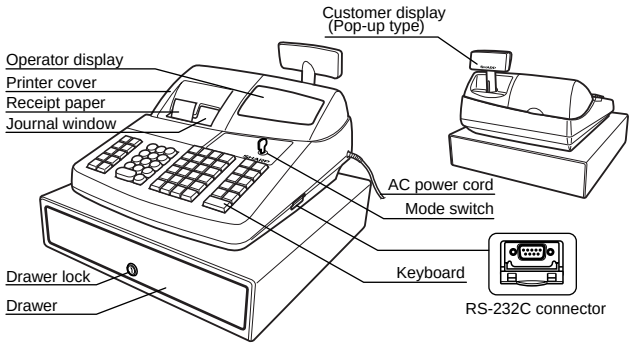
The contents are subject to change without notice.

CHAPTER 1. SPECIFICATIONS

1. APPEARANCE

■Front view ■Rear view



2. RATING

	XE-A401
Weight	28.0lb (12.7kg)
Dimensions	421 (W) x 429 (D) x 297 (H) mm 16.6 (W) x 16.9 (D) x 11.7 (H) inches
Power source	AC 120V (±10%), 60Hz
Power consumption	Stand-by 9W, Operating 49W (max.)
Working temperature	0°C~40°C (32°F to 104°F)

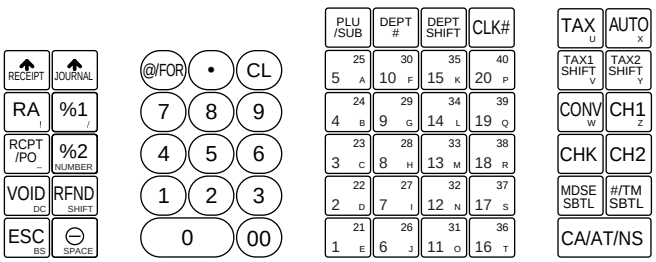
3. KEYBOARD

3-1. KEYBOARD LAYOUT

Type	Normal keyboard
Key position	STD/MAX 59
Key pitch	19 (W) x 19 (H) mm
Key layout	Fixed type

3-2. KEY LIST

■Keyboard layout



Note: The small characters on the bottom or lower right in each key indicates functions or characters which can be used for character entries for text programming.

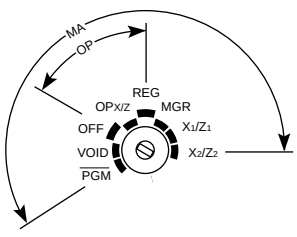
■Key names

KEY TOP	DESCRIPTION
↑ (RECEIPT)	Receipt paper feed key
↑ (JOURNAL)	Journal paper feed key
RA	Received-on account key
RCPT/PO	Receipt print/Paid-out key
VOID	Void key
ESC	Escape key
%1, %2	Percent 1and 2 key
RFND	Refund key
⊖	Discount key
@/FOR	Multiplication key
•	Decimal point key
CL	Clear key
0-9,00	Numeric Keys
PLU/SUB	PLU/Subdepartment key
DEPT#	Department code entry key
DEPT SHIFT	Department shift key
CLK#	Clerk code entry key
Dept1-40	Department keys
TAX	Tax key
Tax 1 SHIFT	Tax 1 shift key
Tax 2 SHIFT	Tax 2 shift key
AUTO	Automatic sequence key
CONV	Conversion key
CHK	Check key
CH1, CH2	Charge 1 and 2 keys
MDSE SBTL	Merchandise subtotal key
#/TM/SBTL	Non-add code/Time display/Subtotal key
CA/AT/NS	Total/Amount tender/Non Sale key

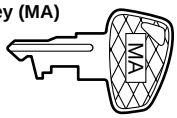
4. MODE SWITCH

4-1. LAYOUT

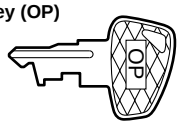
• Rotary type



Manager key (MA)



Operator key (OP)



The mode switch can be operated by inserting one of the two supplied mode keys - manager (MA) and operator (OP) keys. These keys can be inserted or removed only in the “REG” or “OFF” position.

The mode switch has these settings:

OFF: This mode locks all register operations. (AC power turns off.) No change occurs to register data.

OP X/Z: To take individual clerk X or Z reports, and to take flash reports.

It can be used to toggle receipt state “ON” and “OFF” by pressing he [RCP/PO] key.

REG: For entering sales.

PGM: To program various items.

VOID: Enters into the void mode. This mode allows correction after finalizing a transaction.

MGR: For manager’s entries. The manager can use this mode for an override entry.

X1/Z1: To take the X/Z report for various daily totals.

X2/Z2: To take the X/Z report for periodic (weekly or monthly) consolidation.

5. DISPLAY

5-1. OPERATOR DISPLAY

Display device : LCD

Number of line : 2 line

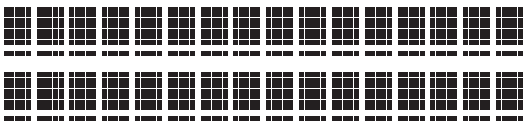
Number of positions : 16 positions

Color of display : Yellow / Green

Character form : 7 segment + Dp

Character size : 14.2 (H) x 7.9 (W) mm

Layout:



5-2. CUSTOMER DISPLAY

Display device : LED

Number of line : 1 line

Number of positions : 7 positions

Color of display : Yellow / Green

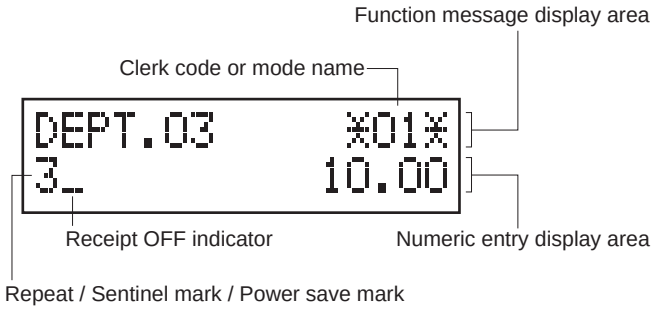
Style : Pop up type

Character form : 7 segment + Dp

Character size : 14.2mm (H) x 7.9mm (W)

Layout:

■Operator display



- Clerk code or Mode name

  The mode you are in is displayed. When a clerk is assigned, the clerk code is displayed in the REG or OP X/Z mode. For example, “∗01∗” is displayed when clerk 01 is assigned.

- Repeat

  The number of repeats is displayed, starting at “2” and incremental with each repeat. When you have registered ten times, the display will show “0” (2 → 3.....9 → 0 → 1 → 2...)

- Sentinel mark

  When amount in the drawer reaches the amount you preprogrammed, the sentinel mark “X” is displayed to advise you to remove the money and put it in a safe place.

- Power save mark

  When the cash register goes into the power save mode, the power save mark (decimal point) lights up.

- Function message display area

  Item labels of departments and PLU/subdepartments and function texts you use, such as %1, (-) and CASH are displayed.

  When an amount is to be entered or entered, “AMOUNT” is displayed: When an amount is to be entered, ------- is displayed at the numeric entry area with “AMOUNT”. When a preset price has been set, the price is displayed at the numeric entry area with “AMOUNT”.

- Numeric entry display area

  Numbers entered using numeric keys are displayed here.

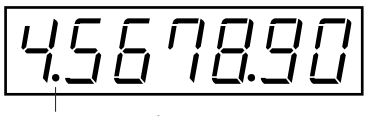
Date and time display

Date and time appear on the display in the OP X/Z, REG, or MGR mode. In the REG or MGR mode, press the [#/TM/SBTL] key to display the date and time.

Error message

When an error occurs, the corresponding error message is displayed in the function message display area.

■Customer display (Pop-up type)



Power save mark
(Lighting the mark only under the power save mode)

6. PRINTER

6-1. PRINTER

- Part number : PR-45M II
- NO. of station : 2 (Receipt and journal)
- Validation : No
- Printing system : Line thermal
- No. of dot : Receipt 288 dots
  Journal 288 dots
- Dot pitch : Horizontal 0.125mm
  Vertical 0.125mm
- Font : 10 dots (W) × 24 dots (H)
- Printing capacity : Receipt max. 24 characters
  Journal max. 24 characters
- Character size : 1.25mm (W) × 3.0mm (H) at 10 × 24 dots
- Print pitch : Column distance 1.5mm
  Row distance 3.75mm
- Print speed : Approximate 50mm/s (13.3 lines/sec)
- Paper feed speed (Manual feed) : Approximate 40mm/s
- Reliability : Mechanism MCBF 5 million lines
  Head life 12.5 million characters
  (at 4 dots/1 character/1 element)
- Paper end sensor : Set up (Receipt and journal)
- Cutter : Manual
- Near end sensor : No

6-2. PAPER

- Paper roll dimension: 44.5 ± 0.5mm in width
  Max. 80mm in diameter
- Paper quality : (Journal/Receipt)
  High-quality paper
  paper thickness: 0.06 to 0.08mm
  Nihon seisi thermal paper : TF50KS-E
  Oji thermal paper : PD150R,
  PD160R

6-3. LOGO STAMP

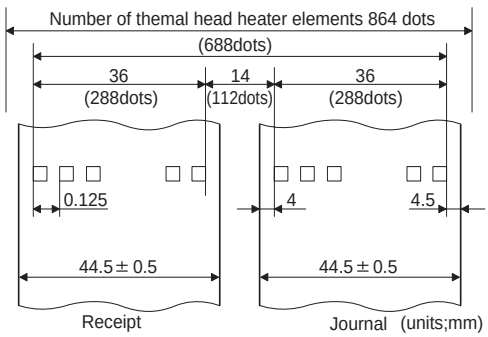
- No

6-4. CUTTER

- Method : Manual

6-5. PRINTING AREA

Receipt & Journal



7. DRAWER

[OUTLINE]

- Standard equipment: Yes
- Max. number of additional drawers: 0
- The drawer consists of:
  1) Drawer box (outer case) and drawer
  2) Coin case (for SEC)
  3) Money case
  4) Lock (attached to the drawer)

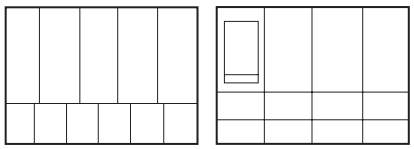
[SPECIFICATION]

7-1. DRAWER BOX AND DRAWER

Model name of the drawer box	SK423
Size	420 (W) x 426 (D) x 114 (H) mm 16.5 (W) x 16.8 (D) x 4.5 (H) inches
color	Gray (PB-N8.0)
Material	Metal
Bell	–
Release lever	Standard equipment: situated at the bottom
Drawer open sensor	–
Separation from the main unit	–

7-2. MONEY CASE

	SEC	SECL
Separation from the drawer	Allowed	Allowed
Separation of the bill compartments from the coin compartments	Allowed	Disallowed
Bill separator	Disallowed	Standard equipment
Number of compartments	5B/6C	4B/8C



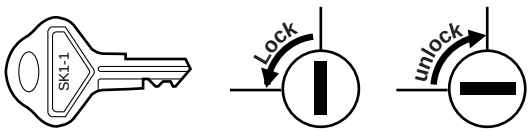
5B/6C 4B/8C

7-3. LOCK (LOCK KEY : LKGIM7331BHZZ)

- Location of the lock: Front
- Method of locking and unlocking:

  To lock, insert the drawer lock key into the lock and turn it 90 degrees counter clockwise.
  To unlock, insert the drawer lock key and turn it 90 degrees clockwise.

- Key No: SK1-1



8. BATTERY

8-1. MEMORY BACK UP BATTERY

Built-in battery: Rechargeable batteries, memory holding time about 1 month (with fully charged built-in batteries, at room temperature)

CHAPTER 2. OPTIONS

1. OPTIONS (NO)

2. SERVICE OPTIONS (NO)

3. SUPPLIES

NO	NAME	PARTS CODE	PRICE RANK	DESCRIPTION
1	Thermal roll paper	TPAPR6645RC05	BA	5 ROLLS/PACK

4. SPECIAL SERVICE TOOLS

NO	NAME	PARTS CODE	PRICE RANK	DESCRIPTION
1	RS-232 Loop-back connector	UKŌG−6705RCZZ	BU	

CHAPTER 3. MASTER RESET AND PROGRAM RESET

1. MASTER RESETTING

Master resetting clears the entire memory and resumes initial values.

Master resetting can be accomplished by using the following procedure:

Procedure A:
1) Unplug the AC cord from the wall outlet.
2) Set the mode switch to the PGM position.
3) While holding down both the JOURNAL FEED key and [CL] key, plugin the AC cord to the wall outlet.

The master reset can also be accomplished in the following case.

In case power failure occurs when the machine has no battery attached to it, the master reset operation is automatically performed after the power has been restored.

(This is because if power failure occurs with no battery attached to the machine, all the memories are lost and the machine does not work properly after power recovery; this requires the master reset operation.)

2. PROGRAM RESETTING (INITIALIZATION)

This resetting resumes the initial program without clearing memory.

This resetting can be operated at below sequence in PGM mode.

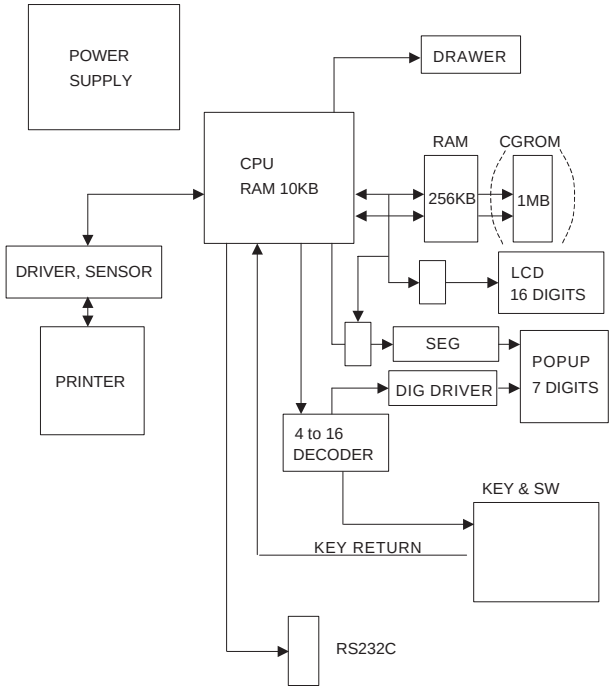
Procedure:
1) Unplug the AC cord from the wall outlet.
2) Set the mode switch to the PGM position.
3) While holding down both JOURNAL FEED key and RECEIPT FEED key, plugin the AC cord to the wall outlet.

Note: In case power failure occurs when the machine has no battery attached to it, the master reset operation is automatically performed after the power has been restored.

CHAPTER 4. HARDWARE DESCRIPTION

1. BLOCK DIAGRAM

XE-A401



CPU

MITSUBISHI M30620SAFP
(INTERNAL RAM 10KB)

EXTERNAL MEMORY

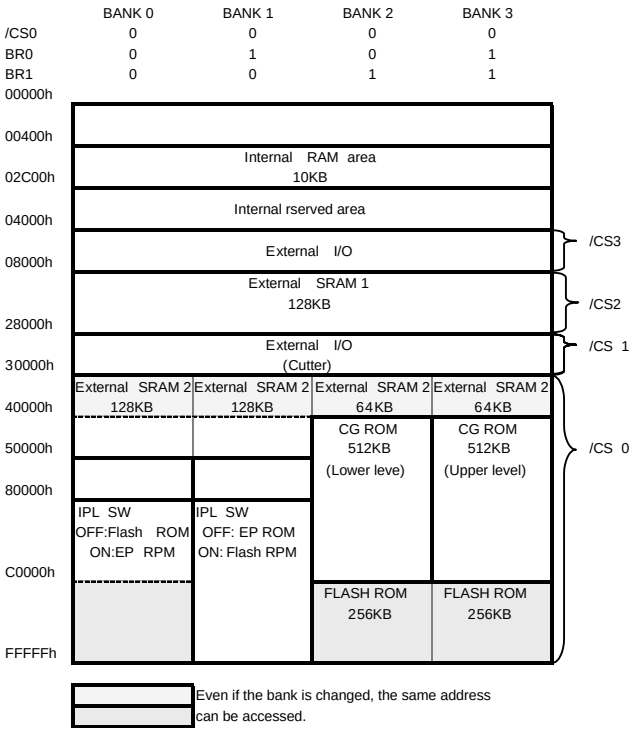
RAM	256KB
FLASH ROM	512KB
	SHARP LH28F004BVT
CGROM	1MB (for Japanese market only)

PRINTER

PR45M

2. MEMORY MAP

2-1. ADDRESS MAP



Only the /CS0 area (30000h ~ FFFFFh) in the bank is valid.

2-2. EXTERNAL BUS

External BUS ACCESS SPEED

SRAM/EPROM/FLASH ROM ; 2 BCLK
CGROM ; 3 BCLK
External I/O ; 1 BCLK ∗1BCLK = 83.3ns (at 12MHz)

SRAM	/CS2 area
	address 08000h ~ 27FFFh 128KB
	Same as ER-A235P
	/CS0 area BANK 0
	address 30000h ~ 4FFFFh 128KB
FLASH ROM	/CS0 area BANK 0
	address 80000h ~ FFFFFh 256KB
	(Moves to Bank 1 when rewritten using EPROM)
CGROM	/CS0 area BANK 2, 3
	address 40000h ~ BFFFFh (512KB x 2)

I/O

∗ CGROM is available only for the Japanese market.

3. PRINTER CONTROL

3-1. STEPPING MOTOR CONTROL

The stepping motor is driven at a constant voltage by Sanken STA471A.

1step: 0.125mm, A1dot: 1step

Printing speed 50mm/s

< CPU's PORT >

No.	CPU PORT	Signal to be used
80	P10	RAS
79	P11	RBS
78	P12	RCS
77	P13	RDS
76	P14	JAS
75	P15	JBS
74	P16	JCS
73	P17	JDS

< Driving steps >

RECEIPT MOTOR

	Driver IC input (CPU output)				Motor driving signal			
STEP	RAS	RBS	RCS	RDS	/RPFA	/RPFB	/RPFC	/RPFD
1	H	L	L	H	L	H	H	L
2	L	H	L	H	H	L	H	L
3	L	H	H	L	H	L	L	H
4	H	L	H	L	L	H	L	H

	Driver IC input (CPU output)				Motor driving signal			
STEP	JAS	JBS	JCS	JDS	/JPFA	/JPFB	/JPFC	/JPFD
1	L	H	H	L	H	L	L	H
2	L	H	L	H	H	L	H	L
3	H	L	L	H	L	H	H	L
4	H	L	H	L	L	H	L	H

∗When the motor is at rest, the same phase as the final excitation phase is RUSH energize for 10 ms to turn off all phases. → Turn all RAS ~ RDS and JAS ~ JDS into L.

No energizing should be allowed at lease 30 ms after stopping the motor before restarting.

When starting the motor, the first excitation phase is RUSH energized for 10 ms to start the motor.

3-2. CUTTER MOTOR CONTROL

< CPU's PORT >

I/O PORT	Signal to be used	Initial value
28000h bit0	CTAO	L
28000h bit1	CTBO	L
28000h bit2	RVPON	–
28000h bit3	CUTS	–

< Driving steps >

CUT METHOD	MOTOR ROTATING DIRECTION	Driver IC input (CPU output)		MOTOR +/- PIN CONTROL	
		CTAO	CTBO	CUTM+	CUTM-
FULL CUT	CCW	H	L	H	L
PARTIAL CUT	CW	L	H	L	H
BREAK		H	H	L	L
STOP		L	L	HI-Z	HI-Z

3-3. HEAD CONTROL

HEAD: 832 dots in all. Printable range: 384 dots at receipt side; 384 dots at journal side

Related PORT

No.	CPU PORT	Signal to be used
30	TXD2	SO
29	RXD2	SI
28	CLK2	PCLK
93	P103	/STRB1
92	P104	/STRB2
91	P105	/STRB3
90	P106	/STRB4
89	P107	LATCH
21	P81	VHCOM

/STB1: 641 ~ 832dot: 192 dots in all
/STB2: 449 ~ 640dot: 192 dots in all
/STB3: 193 ~ 448dot: 256 dots in all
/STB4: 1 ~ 192dot: 192 dots in all
Total 832 dots

∗When turning on or off the printer power supply, make sure to turn /STB1, 2, 3, 4 to "H".

∗Do not turn on without paper.

∗THERMAL HEAD power supply control : Turns ON when P81= "H"; turns OFF when "L". (The power supply for HEAD and STEPPING MOTOR is shared). When printing is finished (when the motor is stopped) Athe power should be turned OFF.

∗Before printing or feeding paper, perform A/D conversion in ∗∗ ms after the printer head is turned ON and make sure the voltage is stable.
(The power supply of the printer head should be turned ON and OFF by using the regulator IC.)

4. I/O

M16C/24 PORT MEMORY SPACE: NORMAL MODE
PROCESSOR MODE: MICRO PROCESSOR MODE
It is used by (SEPARATE BUS 8bit Width)

PORT	PIN No.	I/O	Pin name	Signal name	Initial value	OFF MODE	Function	PORT	PIN No.	I/O	Pin name	Signal name	Initial value	OFF MODE	Function
P00	88	I/O		D0		Out L		P54	42	O	/HLDA	(NU)		Out L	
P01	87	I/O	D1	D1		Out L		P55	41	I	/HOLD	/HOLD		In	
P02	86	I/O	D2	D2		Out L		P56	40	O	ALE	(NU)		Out L	
P03	85	I/O	D3	D3		Out L		P57	39	I	/RDY	/RDY		In	
P04	84	I/O	D4	D4		Out L		P60	38	O	P60	DR1	L	Out L	DRAWER 1 DRIVE SIGNAL
P05	83	I/O	D5	D5		Out L		P61	37	O	CLK0	FSCK(NU)	L	Out L	FMC FSCK
P06	82	I/O	D6	D6		Out L		P62	36	I	RXD0	FRD(NU)	L	Out L	FMC FRD
P07	81	I/O	D7	D7		Out L		P63	35	O	TXD0	FSD (NU)	L	Out L	FMC FSD
P10	80	O	P10	RAS	L	Out L	RECEIPT PAPER FEED A	P64	34	O	/RTS1	/RS	H	Out L	RS-232 /RS
P11	79	O	P11	RBS	L	Out L	RECEIPT PAPER FEED B	P65	33	O	P65	/FRES(NU)	L	Out L	FMC /FRES
P12	78	O	P12	RCS	L	Out L	RECEIPT PAPER FEED C	P66	32	I	RXD1	RD		In	RS-232 RD
P13	77	O	P13	RDS	L	Out L	RECEIPT PAPER FEED D	P67	31	O	TXD1	SD	H	Out L	RS-232 SD
P14	76	O	P14	JAS	L	Out L	JOURNAL PAPER FEED A	P70	30	O	TXD2	SO	L	Out L	PRINTER DATA OUT
P15	75	O	P15	JBS	L	Out L	JOURNAL PAPER FEED B	P71	29	I	RXD2	SI		In	PRINTER DATA IN
P16	74	O	P16	JCS	L	Out L	JOURNAL PAPER FEED C	P72	28	O	CLK2	PCLK	L	Out L	PRINTER CLOCK
P17	73	O	P17	JDS	L	Out L	JOURNAL PAPER FEED D	P73	27	O	P73	DR2	L	Out L	DRAWER 2 DRIVE SIGNAL
P20	72	O	A0	A0		Out L		P74	26	O	P74	/ER	H	Out L	RS-232 /ER
P21	71	O	A1	A1		Out L		P75	25	I	P75	/CD		In	RS-232 /CD
P22	70	O	A2	A2		Out L		P76	24	I	P76	/CS		In	RS-232 /CS
P23	69	O	A3	A3		Out L		P77	23	I	P77	/DR		In	RS-232 /DR
P24	68	O	A4	A4		Out L		P80	22	O	P80	BUZZER	L	Out L	
P25	67	O	A5	A5		Out L		P81	21	O	P81	VHCOM	L	In	PRINTER HEAD CONTROL
P26	66	O	A6	A6		Out L		P82	20	I	/INT0	POFF		In	
P27	65	O	A7	A7		Out L		P83	19	I	/INT1	/FRDY(NU)	L	Out L	FMC /FRDY
P30	63	O	A8	A8		Out L		P84	18	O	P84	/BUSY(NU)	L	Out L	FMC #BUSY
P31	61	O	A9	A9		Out L		P85	17	I	/NMI	/NMI(NU)		In	
P32	60	O	A10	A10		Out L		P86	11	O	XCOUT	XCOUT			32.768kHz
P33	59	O	A11	A11		Out L		P87	10	I	XCIN	XCIN			32.768kHz
P34	58	O	A12	A12		Out L		P90	7	I	P90	MODE		In	MODE KEY SENSE
P35	57	O	A13	A13		Out L		P91	6	I	P91	MSENS		In	MISCELLANEOUS SENSE
P36	56	O	A14	A14		Out L		P92	5	O	P92	BA1	L	Out L	BANK signal 1
P37	55	O	A15	A15		Out L		P93	4	O	P93	BA0	L	Out L	BANK signal 0
P40	54	O	A16	A16		Out L		P94	3	O	P94	DATA /CE	L	Out L	LCD DATA LATCH signal
P41	53	O	A17	A17		Out L		P95	2	O	P95	BLON	L	Out L	BACK LIGHT ON
P42	52	O	A18	A18		Out L		P96	1	O	P96	LCDON	L	Out L	LCD POWER ON
P43	51	O	A19	A19		Out L		P97	100	I	P97	IPLON		In	IPL ON signal
P44	50	O	/CS0	/CS0		Out H		P100	97	I	AN0	TM		In	HEAD temperature monitor
P45	49	O	/CS1	/CS1		Out L		P101	95	I	AN1	VPTEST		In	HEAD voltage monitor
P46	48	O	/CS2	/CS2		Out H		P102	94	I	AN2	VREF		In	Referance voltage
P47	47	O	/CS3	/CS3		Out L		P103	93	O	AN3	/STRB1	H	In	PRINTER STORE SIGNAL 1
P50	46	O	/WR	/WR		Out L		P104	92	O	AN4	/STRB2	H	In	PRINTER STORE SIGNAL 2
P51	45	O	/BHE	(NU)		Out L		P105	91	O	P105	/STRB3	H	In	PRINTER STORE SIGNAL 3
P52	44	O	/RD	/RD		Out L		P106	90	O	P106	/STRB4	H	In	PRINTER STORE SIGNAL 4
P53	43	O	BCLK	BCLK		Out L		P107	89	O	P107	LATCH	L	In	PRINTER LATCH SIGNAL

Power supply/CONTROL pins

PORT	PIN No.	I/O	Pin name	Function	PORT	PIN No.	I/O	Pin name	Function
BYTE	8	I	BYTE	Connected to VCC	Vcc	62		Vcc	Connected to VCC
CNVss	9	I	CNVss	Connected to GND	Vss	64		Vss	connected to GND
/RESET	12	I	/RESET		AVss	96		AVss	Connected to GND
Xout	13	O	Xout	OPEN	Vref	98		Vref	Connected to VCC
Vss	14		Vss	Connected to GND	AVcc	99		AVcc	Connected to VCC
Xin	15	I	Xin	connected to Spectram diffusion IC					
Vcc	16		Vcc	Connected to VCC					

5. KEY-DISPLAY

5-1. LCD CONTROL

Basically the same as the ER-A275P.

LCD-related registers

Function	Address	R/W
LCD Write Data	04001h	W
LCD Read Data	04002h	R
LCD Control Signal / Key Strobe Signal	04003h	W
Data Latch Signal	CPU port P94	W

< LCD Control Signal / Key Strobe Signal >

Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
04003h	–	E	R/W	RS	KS3	KS2	KS1	KS0

Bit7 : Not used

Bit6 : E
Enable Signal ┘‾└ Enable

Bit5 : R/W
H : Data read L : Data Write

Bit4 : RS
H : Data input L : Instruction Input

< Data Latch Signal >

L : LCD write data latch

5-2. KEY/DISPLAY SCAN

On the A401, the key and display scan signal is common.

KEY/display SCAN and key read should be performed at the following timing.

① KEY/display SCAN cycle: 10ms

② Blanking time: 50us

③ KEY DATA READ timing: More than 10 ms from the fall of the SCAN signal

Key / Display-related registers

Function	Address	R/W
LED Segment Signal	04000h	W
LCD Control Signal / Key Strobe Signal	04003h	W
Key Return Signal	04003h	R

< LED Segment Signal >

Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
04000h	dp	g	f	e	d	c	b	a

< LCD Control Signal / Key Strobe Signal >

Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
04003h	-	E	R/W	RS	KS3	KS2	KS1	KS0

Bit3 ~ 0 : KS3 ~ 0

Strobe signals for keys and POP UP Display are generated at KS3 - 0.

< Key Return Signal >

Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
04003h	KR7	KR6	KR5	KR4	KR3	KR2	KR1	KR0

5-3. KEYSCAN MATRIX

PENDING

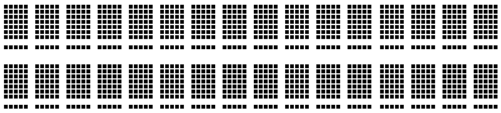
Others

	CPU	STO	ST1	ST2	ST3	ST4	ST5	ST6	ST7	ST8	ST9
MODE	P90	SRV	PGM		Time	REG	MGR	X1/Z1	X2/Z2		
Others	P91	PF-R	PF-J	RPE	HEAD UP	JPE		DRAWER OPEN	MRS	RS/CI	

5-4. DISPLAY (PENDING)

The A401 has an LCD display, 5 x 7 dots, 2 lines, at the front side and a 7-digit LED at the pop-up side.

FRONT:



POP UP:

- Display DIGIT signal

  The above ST0 ~ ST6 are display digit signals.

  ST0: 1st digit ~ ST6: 7th digit

- Display SEGMENT signal

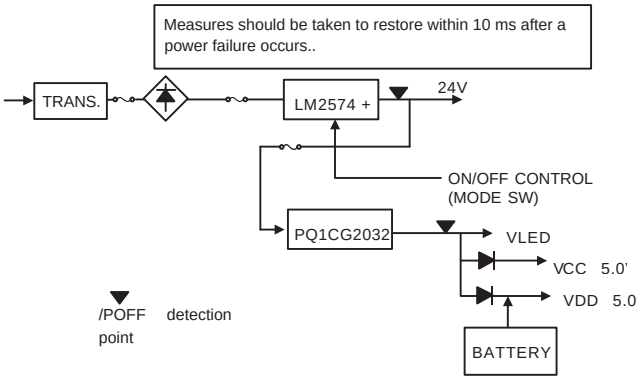
  The LED segment signal is outputted by writing SEGMENT data in the /CS3 space.

  Correspondence of DATA ~ SEGMENT

  D0 ~ D6 → A ~ g

  D7 → DP

6. POWER SUPPLY



7. REWRITING FLASH MEMORY

IPL from EP-ROM: After IPL SW is set to ONA the program is started from EP-ROM by turning on the power. The program on EP-ROM is transferred to flash ROM by switching the banks through S-RAM.

IPL from COM: Data from the PC is written to flash ROM through the COM port. (Max. 38.4 kbps)

8. DRAWER

The A401 has a 1 channel of drawer port. (+ 1 channel is reserved for the CPU PORT) O R No open sensor is provided.

The driving time for the DRAWER solenoid are as follows: 50ms (max) 45ms (min)

9. PRINT RATE

384 dots/1 line

10. A/D CONVERSION

The printer power supply voltage should be measured at more than 10 ms after the printer is turned ON.

11. BUZZER

PIEZO type BUZZER

The oscillating frequency is 4.0kHz ± 0.5kHz

12. RESET

The RESET signal is generated when:

1) The mode key switch is turned from SRV to a position other than SRV'(excluding OFF).

2) The power is turned ON more than 10 seconds after the power is turned OFF. (The reset signal may not be issued if the POWER-OFF time is short.)

3) The mode key switch is turned from OFF to a position other than OF (excluding the SRV position). (If the power-off time is less than 5 seconds, the reset signal may not be issued.)

CHAPTER 5. DIAGNOSTIC PROGRAM

1. TEST ITEMS

The test items are as follows:

	Code	Description
1)	100	Display buzzer test
2)	101	Key code
3)	102	Printer test
4)	104	Keyboard test
5)	105	Mode switch test
6)	106	Printer sensor test
7)	107	Clock display test
8)	110	Drawer 1 open & sensor test
9)	111	Drawer 2 open & sensor test
10)	120	External RAM test
11)	121	CPU internal RAM test
12)	130	FLASH ROM test
13)	140	EP ROM test
14)	150	CG ROM test 1 (sum check)
15)	151	CG ROM test 2 (printing of content)
16)	160	AD conversion port test
17)	500	RS232C test
18)	161	Test program for checking main PWB unit
19)	162	Process continuity check program
20)	165	Aging test

∗ Starting DIAG.

Mode switch: PGM
Key operation: Above code + "PO" key (for U)
"PO" key (for V)

Hereafter the "PO" key (for U and V) is simply called "PO" key.

∗ The following test items are not opened to the market.

Test item	Overseas market	Japanese market
Drawer 2 open & sensor test	×	×
CG ROM test 1 (sum check)	×	○ (opened)
CG ROM test 2 (printing of contents)	×	×
AD conversion port test	×	×
Aging test (temperature rise/for EMI and EMC)	×	×
Main PWB unit check test program	×	×
Process continuity check program	×	×

2. DESCRIPTION OF EACH DIAG PROGRAM

1) DISPLAY BUZZER TEST

① Key operation

100 → RCPT/PO

② Test procedure

OP display

D	I	S	P		B	U	Z	Z	E	R			P	G	M
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Rear display 4.5.6.7.8.9.0.

The decimal point on the LED and the cursor on the LCD will shift from the lower digit to the upper digit in steps of 1 digit (every 200 msec)
After that, all segments will turn on (about 1 sec)
These two modes are repeated.
At the same time, the buzzer sounds continuously.

③ Check that:

A) Each position is correctly displayed.

B) The brightness of each number is uniform.

C) The buzzer sound is normal.

④ End of testing

You can exit the test mode by pressing any key. The following is printed.

1 0 0

2) KEY CODE

① Key operation

101 → RCPT/PO

② Test procedure

OP display

K	E	Y		C	O	D	E						P	G	M
													○	○	○

KEY CODE

③ Check that:

KEY code : Every time a key is pressed, the hard code of that key is displayed as a decimal number.
When a key is pressed twice or pressed in an incorrect manner, --- will be displayed.

④ End of testing

You can exit the test mode by turning the mode switch to a position other than the PGM mode. The printer prints as follows:

1 0 1

3) PRINTER TEST

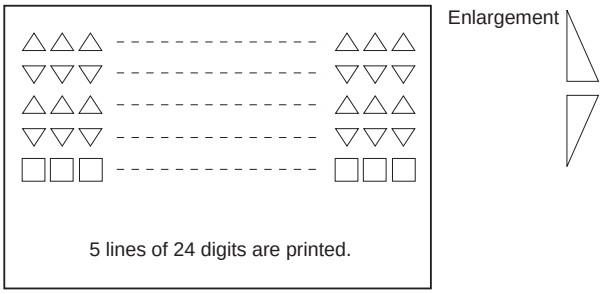
① Key operation

102 → RCPT/PO

② Test procedure

OP display

R	/	J		P	R	I	N	T	E	R			P	G	M



At the receipt side, the logo is also printed and the receipt is issued.

③ Check that:

The print is free from contamination, blur, and uneven density.

④ End of testing

The test will end automatically.

4) KEYBOARD TEST

① Key operation

____104 → RCPT/PO

↑

KEY check sum code

② Test procedure

The keyboard is checked using the sum check code of the key code.

If the sum check code is not entered, the check is made using the sum check code of the default keyboard arrangement

The sum check data for each model is entered to the front 4 digits of the DIAG code, and that data is compared with the key data added until the final key (CA/AT) is pressed.

Both data are the same, the test ends, printing the number given below.

If both data are different, the printer prints the error message.

OP display

K	E	Y		B	O	A	R	D					P	G	M
1	0	4											○	○	○

KEY CODE

③ Check:

A) The content of completion print

④ End of testing

When the test ends normally: **1 0 4**

When an error occurs: E – ~ – **1 0 4**

Note: Calculation of key sum check data

Hard codes (hexadecimal number) at the position (excluding feed key) where there is an input data contact are added.

However, the end key (TL) is not added.

This data to which hard codes have been added is converted into a decimal number value, which will become the sum check data that will be entered when DIAG is started.

5) MODE SWITCH TEST

① Key operation

105 → RCPT/PO

② Test procedure

OP display

M	O	D	E		S	W						P	G	M
1	0	5												X

MODE: PGM_VOID_OFF_OP X/Z_REG_MGR_X1/Z1_X2/Z2__PGM

X : 1 2 9 3 4 5 6 7 1

The above X must be read in the correct order. (If the contact is open, 9 will be displayed.)

③ Check:

The display during testing and the content of the completion print.

④ End of testing

When the test ends normally **1 0 5**

When an error occurs: E – ~ – **1 0 5**

6) PRINTER SENSOR TEST

① Key operation

106 → RCPT/PO

② Test procedure

Check the status of the paper end sensor and head up sensor.

OP display

R	/	J		S	E	N	S	O	R				P	G	M
1	0	6											X	–	Y

③ Check the following.

X: 1 - Paper present at the receipt side
O - No paper at the receipt side

Y: 1 - Paper present at the journal side
O - No paper at the journal side

④ End of testing

You can exit the test mode by pressing any key and the printer prints the following.

1 0 6

7) CLOCK TEST

① Key operation

107 → RCPT/PO

② Test procedure

OP display

T	I	M	E	R		C	H	E	C	K			P	G	M
1	0	4						*	*	–	*	*		*	*

Hour Min. Sec.

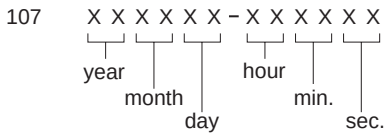
Blinks at an interval of 0.5 sec.

③ Check that:

"–" blinks and the clock counts up.

④ End of testing

When any key is pressed, the date and time are printed and the test mode will be terminated.



8) DRAWER 1 OPEN & SENSOR TEST

① Key operation

110 → RCPT/PO

② Test procedure

OP display

D	R	A	W	E	R		1					P	G	M
														X

X : O = DRAWER OPENED
C = DRAWER CLOSED

③ Check that:

A) The drawer 1 opens normally.

B) The sensor correctly indicates the status of the drawer 1.

∗ On the XE-A401, “C” (CLOSED) is always displayed.

④ End of testing

You can exit the test mode by pressing any key. The printer prints the following.

1 1 0

9) DRAWER 2 OPEN & SENSOR TEST

① Key operation

111 → RCPT/PO

② Test procedure

OP display

D	R	A	W	E	R		2					P	G	M
														X

X : O = DRAWER OPENED
C = DRAWER CLOSED

③ Check that:

A) The drawer 2 opens normally.

B) The sensor correctly indicates the status of the drawer 2.

∗ On the XE-401, “C” (CLOSED) is always displayed.

④ End of testing

You can exit the test mode by pressing any key. The printer prints the following.

1 1 1

10) EXTERNAL RAM TEST

① Key operation

120 → RCPT/PO

② Test procedure

The standard 256 Kbyte RAM is checked.

The contents of memory must be stored before and after this test.

RAM (08000H 27FFFH area and 40000H 5FFFFH area) is tested in the following procedure:

a) Store data in the test areas

b) Write “00H”

c) Read and compare “00H” and then write”55H”

d) Read and compare “55H” and then write “AAH”

e) Read and compare “AAH”

f) Restore stored data

If an error occurs at a step, the error is printed.

If any error does not occur, the following addresses are checked in turns.

Addresses to be checked:

10000H , 10001H , 10002H , 10004H , 10008H ,
10010H , 10020H , 10040H , 10080H ,
10100H , 10200H , 10400H , 10800H ,
11000H , 12000H , 14000H , 18000H ,
20000H
40000H , 40001H , 40002H , 40004H , 40008H ,
40010H , 40020H , 40040H , 40080H ,
40100H , 40200H , 40400H , 40800H ,
41000H , 42000H , 44000H , 48000H ,
50000H

OP display

R	A	M										P	G	M
1	2	0												

③ Check:

A) The completion print.

④ End of testing

The program ends after printing as follows:

When the test ends normally: 120
When the test end abnormally: Ex – ~ – 120
∗∗∗∗∗
x = 1:Data error
x = 2:Address error

When an error occurs, the printer outputs the error message and the address where the error has occurred in the area ∗∗∗∗∗.

11) CPU INTERNAL RAM TEST

① Key operation

121 → RCPT/PO

② Test procedure

The test program tests internal RAM (10 Kbytes) of the CPU.

The contents of memory must be stored before and after this test.

RAM (00400H ~ 02BFFH area) is tested in the following procedure.

a) Store data in the test area.

b) Write “00H”

c) Read and compare “00H” and then write “55H”

d) Read and compare “55H” and then write “AAH”

e) Read and compare “AAH”

f) Restore stored data

If an error occurs at a step, the error is printed.
If any error does not occur, the following addresses are checked in turns.

Addresses to be checked:

01000H , 01001H , 01002H , 01004H , 01008H
01010H , 01020H , 01040H , 01080H ,
01100H , 01200H , 01400H , 01800H ,
02000H

OP display

C	P	U		R	A	M						P	G	M
1	2	1												

③ Check:

The completion print.

④ End of testing

The test program ends after printing.

When the test ends normally: 121

When the test ends abnormally: Ex – ~ – 121

∗∗∗∗∗

x = 1:Data error

x = 2:Address error

If an error occurs, the printer outputs the error message and the address where the error has occurred in the area ∗∗∗∗∗.

12) FLASH ROM TEST

① Key operation

130 → RCPT/PO

② Test procedure

The test program checks that the checksum of the flash ROM (BANK0F80000H ~ FFFFFH).

The lower two digits of the checksum should be 10H. (pending)

OP display

F	L	A	S	H		R	O	M				P	G	M
1	3	0												

③ Check:

The completion print.

④ End of testing

The test will automatically be terminated and the printer prints as follows:

When the test ends normally: 130

ROM ∗∗∗∗∗∗∗∗ (Model name)

∗∗∗∗∗∗∗∗ (Version)

When the test ends abnormally: E – – ~ – – 130

ROM ∗∗∗∗∗∗∗∗ (Model name)

∗∗∗∗∗∗∗∗ (Version)

13) EP ROM TEST

(Note: This test can only be performed when an EP ROM is installed on the Main PWB, otherwise you will receive an error. See pg 16.)

① Key operation

140 → RCPT/PO

② Test procedure

The test program checks that the check sum of EP ROM (BANK1F80000H ~ FFFFFH) is correct.

The lower 2 digits of the check sum should be 10H.(pending)

OP display

E	P		R	O	M							P	G	M
1	4	0												

③ Check:

The completion print.

④ End of testing

The test will automatically terminated and the following printed.

When the test ends normally: 140

ROM ∗∗∗∗∗∗∗∗ (Model name)

∗∗∗∗∗∗∗∗ (Version)

When the test ends abnormally: E– – ~ – – 140

ROM ∗∗∗∗∗∗∗∗ (Model name)

∗∗∗∗∗∗∗∗ (Version)

14) CG ROM TEST 1 (SUM CHECK)

① Key operation

150 → RCPT/PO

② Test procedure

The test program checks that the check sum of CGROM (BANK2,3F40000H ~ BFFFFH) is correct.
The lower 4 digits of the check sum should be FFA0H.

OP display

C	G		R	O	M							P	G	M
1	5	0												

③ Check:

The completion print.

④ End of testing

The test will automatically be terminated and the printer prints as follows:

When the test ends normally: 150

When the test ends abnormally: E– – ~ – – 150

15) CG ROM TEST 2 (PRINTING OF CONTENTS)

① Key operation

151 → RCPT/PO

② Test procedure

The Chinese character data stored in CG ROM is continuously printed.

OP display

C	G		P	R	I	N	T					P	G	M
1	5	1												

③ End of testing

You can stop printing by using Service reset.
Or the test mode will be terminated when all data in CG ROM is printed.

16) AD CONVERSION PORT TEST

① Key operation

160 → RCPT/PO

② Test procedure

The test program displays the voltage of each AD conversion port.

Display

OP display

T	M				=	*	*	*	*			P	G	M
1	6	0												

↓

OP display

V	R	F			=	*	*	*	*			P	G	M
1	6	0												

↓

OP display

V	P	T	S	E	T	=	*	*	*	*			P	G	M
1	6	0												

↓

End of testing

17) RS232C TEST

Install the RS232C loopback connector.

① Key operation

500 → RCPT/PO

② Test procedure

The test program checks the control signals.

OUTPUT		INPUT			
/ER	/RS	/DR	/CI	/CD	/CS
OFF	OFF	OFF	OFF	OFF	OFF
OFF	ON	OFF	OFF	ON	ON
ON	OFF	ON	ON	OFF	OFF
ON	ON	ON	ON	ON	ON

Data communication check

A loopback test of 256-byte data between is performed.

DATA: $00 - $FF BAUD RATE :9600 BPS

OP display

R	S	2	3	2	C		T	E	S	T			P	G	M
5	0	0													

③ Check:

The completion print.

④ End of testing

Completion print		RS TEST	OK
Error print		RS TEST	**NG**ERxx
xx	Contents of error		
01	ER DR error		
02	ER CI error		
03	RS CD error		
04	RS CD error		
05	SD RD error	DATA error	
06	SD RD error	DATA error/framing error	

18) TEST PROGRAM FOR CHECKING MAIN PWB UNIT

① Key operation

161 → RCPT/PO

② Test procedure

The test program checks the following items continuously.(The check is continued even if an error occurs.)

1. Display buzzer

OP display

D	I	S	P		B	U	Z	Z	E	R			P	G	M
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Rear display 4.5.6.7.8.9.0.

Checks the display and buzzer.
You can end this check by pressing any key.

2. Printer

The printer prints in the same way as in Job#102.

3. Printer sensor

OK if “receipt paper Yes” and “journal paper Yes” are indicated.

If not, Error number 7 will be printed (equivalent to Job#106)

4. Drawer 1 open

Visually check that the drawer 1 is opened.

5. RAM

The test program checks memory in the same manner as for the standard RAM check (Job# 120). If an error occurs, the following code will be printed.

When a data error occurs, Error number 19 is printed.

When an address error occurs, Error number 20 will be printed.

6. FLASH ROM

The test program checks FLASH ROM in the same manner as for the flash ROM check (Job#130). If an error occurs, the following code will be printed.

When an data error occurs, Error number 25 will be printed.

7. CG ROM sum check (for Japanese market only)

The test program checks CG ROM in the same manner as for the CG ROM check (Job#150). If an error occurs, the following code will be printed.

When a data error occurs, Error number 26 will be printed.

8. Standard RS232C

The test program checks the standard RS232C in the same manner as for the RS232C loopback test (Job#500). If an error occurs, the following code will be printed.

When an error occurs, Error number 24 will be printed.

9. Clock

The clock is displayed in the same manner as for the Job# 107.

Visually check the clock counts up in seconds.

Error print format

EXX--- **1 6 1**

XX : Error No.

③ Check:

The completion print and error print.

④ End of testing

The test program will be terminated when the completion print is printed. (The completion print is printed regardless of whether any error occurs.)

Completion print

1 6 1

19) PROCESS CONTINUITY CHECK PROGRAM

① Key operation

□□□□ 162 → RCPT/PO

↑

KEY sum check code

If the sum code is not entered, the check will be performed using the sum code for the default keyboard arrangement.

② Test procedure

1. Display check

   Test procedure:See Job# 100 “Display buzzer”.
   You can end the display check by pressing any key.

2. Printer

   The printer prints in the same way as in Job#102.

3. Printer sensor

   OK if “Paper Yes and head DOWN” are indicated.
   If not, Error number 7 will be printed.

4. Keyboard

   (See Job# 104.)
   If an error occurs, Error number 9 will be printed.

5. Mode switch

   (See Job#105.)
   If an error occurs, Error number 10 will be printed.

6. Drawer 1 open

   Visually check that the drawer 1 opens.

7. Standard RAM device

   The test program checks memory in the same manner as for the standard RAM check (Job#120). If an error occurs, the following code will be printed.
   When a data error occurs, Error number 19 will be printed.
   When an address error occurs, Error number 20 will be printed.

8. FLASH ROM

   The test program checks flash ROM in the same manner as for the FLASH ROM CHECK (Job# 130). If an error occurs, the following code will be printed.
   When a data error occurs, Error number 25 will be printed.

9. CG ROM sum check (for Japanese market only)

   The test program checks CD ROM in the same manner as for the CG ROM check (Job# 150). If an error occurs, the following code will be printed.
   When a data error occurs, Error number 26 will be printed.

10. Standard RS232C

    The test program checks the standard RS232C in the same manner as for the RS232C loopback test (Job# 500). If an error occurs, the following code will be printed.
    When an error occurs, Error number 24 will be printed.

11. Sleep mode test

    The test program checks that the system gets in the SLEEP MODE (One Dp comes on.)
    You can exit the test program by pressing any key.

③ Check:

The completion print and error print.

④ End of testing

The test program will automatically terminated after printing the completion print. (The completion print is printed regardless of whether any error has occurred.

Completion print

1 6 2

List of error numbers for process continuity check program

No.	TEST process	No.	TEST process	No.	TEST process
1	-	12	-	22	-
7	PAPER SENSOR	13	-	24	RS232C
9	KEY	19	Standard RAM (DATA)	25	CPU Built-in ROM
10	MODE SW	20	Standard RAM (ADDRESS)	26	CG ROM SUM CHECK

20) AGING TEST (FOR EMI/EMCTEST)

Winding is performed regardless of setting.

① Key operation

□165 → RCPT/PO

Type a number for the operating interval. (Example: When 4165, CH are entered, printing is performed every 4 seconds.)

∗ Not 4 sec. weight & printing

② Test procedure

OP display

T	E	S	T		D	I	A	G				P	G	M
									○	○	○	○	○	○

Rear display ○○○○○○

The following tests will be repeated.

A) NO SALE print

B) RS232C loopback test

   If the port loopback data agrees, it is OKed and control proceeds to (C).
   If a data error occurs, the test is repeated. If the data agrees, it is OKed and control proceeds to (C). If an error occurs three times in succession, the error message saying the occurrence of an error at RS-PORT 1 will be printed before control proceeds to (C).

C) The test program displays the number loops at OOOOOO and control returns to (A).

   Loop between 000000 ~ 999999

③ Check whether:

Any error occurred or not seeing the print.

④ End of testing

You can exit the test program by pressing any key.

3. KEY CODE TABLE

XE−A401U

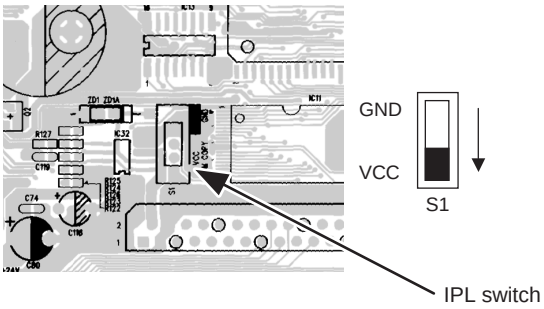
				083	067	147	148			003	004
↑ RF	↑ JF	052	132	116	084	068	146	018		002	005
033	037	050	130	114	082	066	149	145		017	001
032	048	053	133	117	085	069	065	064		016	000
038	054	128	129	113	081	080	086	070		022	006
039	055	118		112	102	103	087	071		007	

CHECK SUM : 4 0 7 5

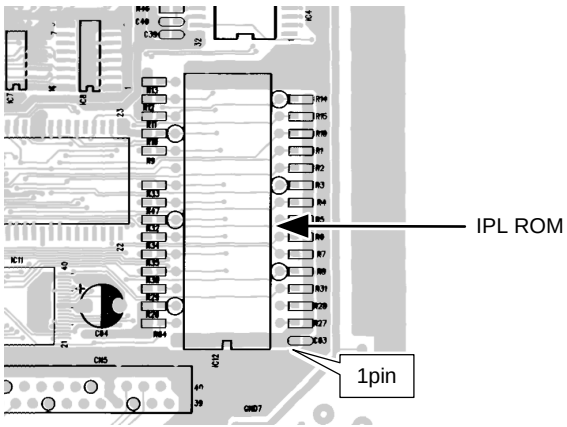
CHAPTER 6. IPL FROM EP-ROM

Before working on the installation, unplug the AC cord from the AC outlet.

1. Open the top cabinet.
2. Set the IPL switch (S1) to VCC position.



3. Install the IPL ROM to the IC socket of the MAIN PWB.

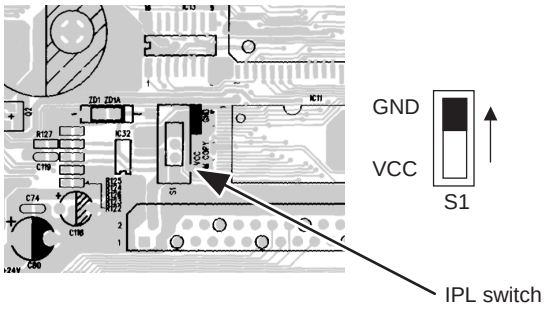


4. Turn the mode key switch to PGM position, and insert AC plug in AC outlet.
5. The IPL procedure is started.

   When the procedure is completed, the message of “Completed.” Is shown.

```
P–ROM  COPY
Completed.
```

6. Unplug the AC cord from the AC outlet.
7. Remove the IPL ROM to the IC socket of the MAIN PWB.
8. Set the IPL switch (S1) to GND position.



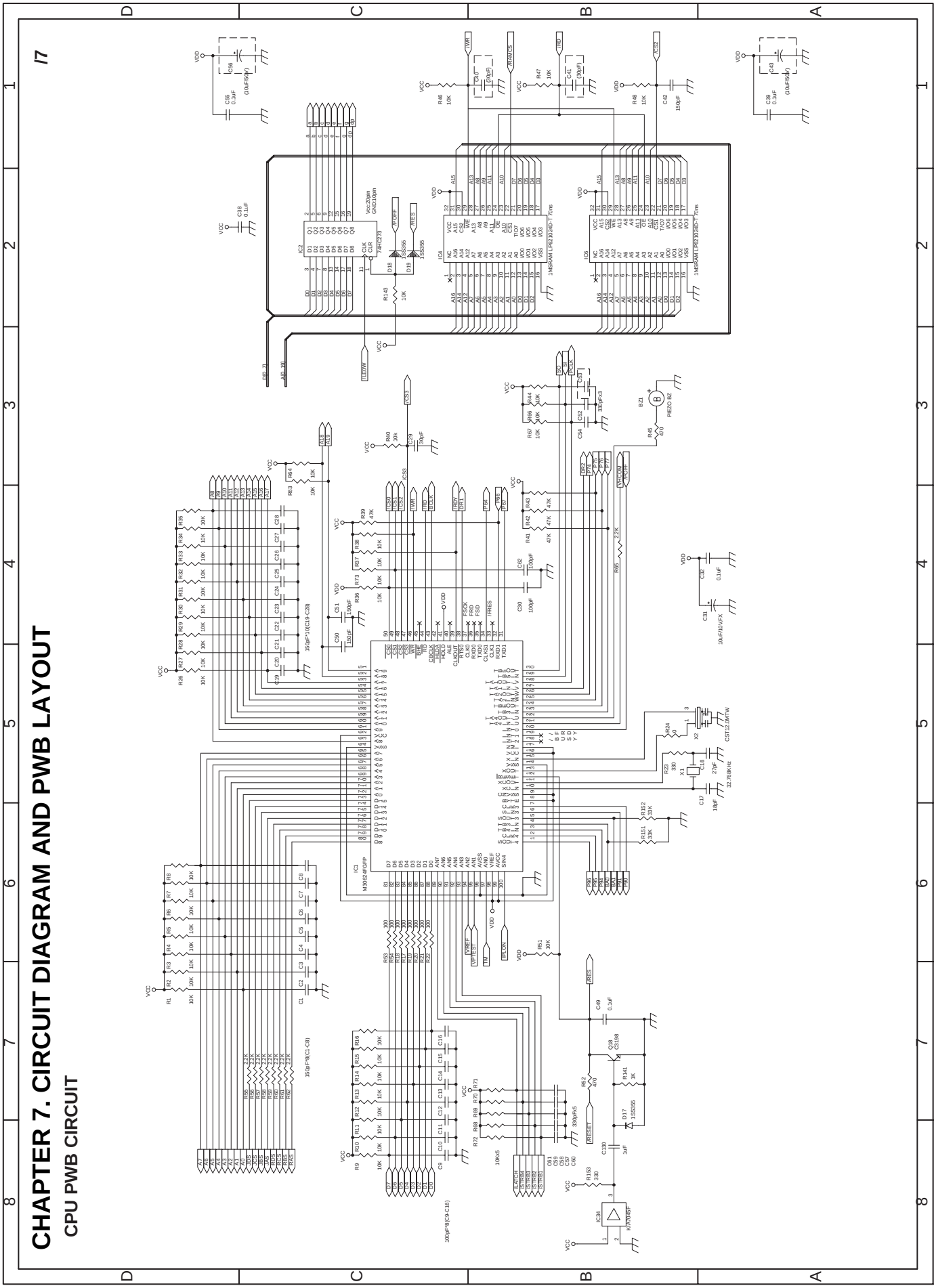
9. Replace the top cabinet.
10. Perform a master reset.

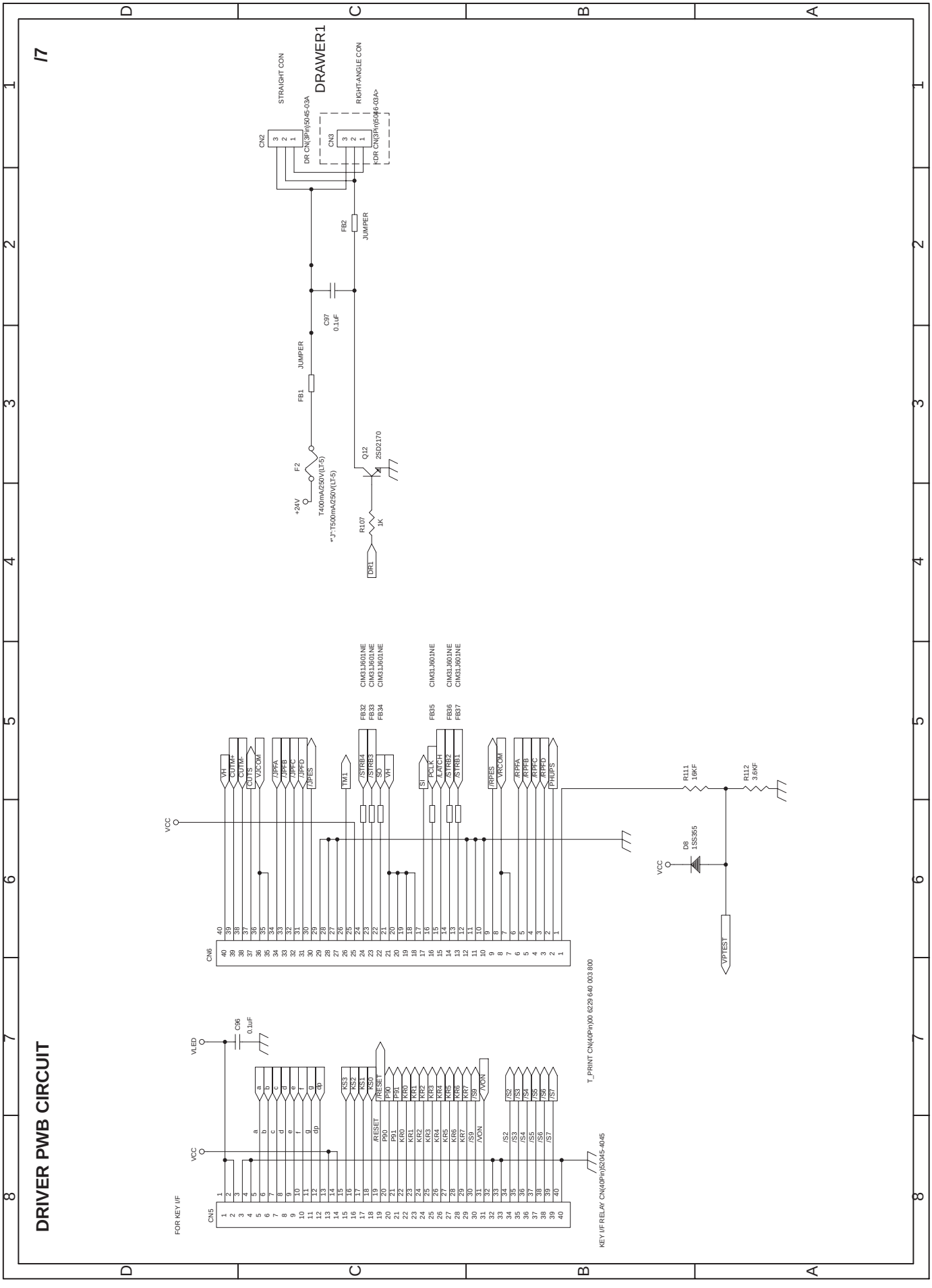
    While holding down Journal feed key and CL key, insert AC cord in AC outlet.

```
*** MRS. ***
```

CHAPTER 7. CIRCUIT DIAGRAM AND PWB LAYOUT

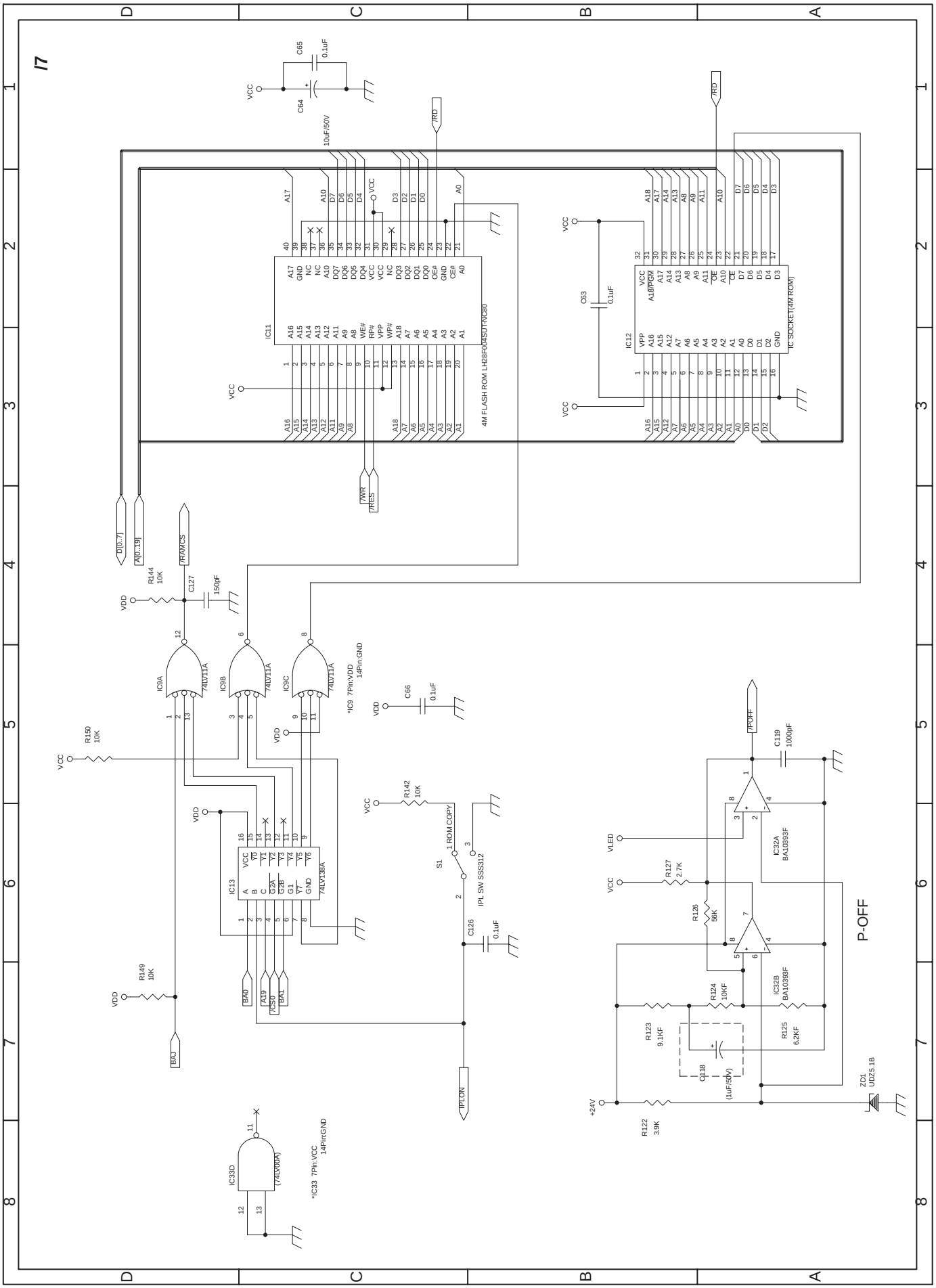
CPU PWB CIRCUIT

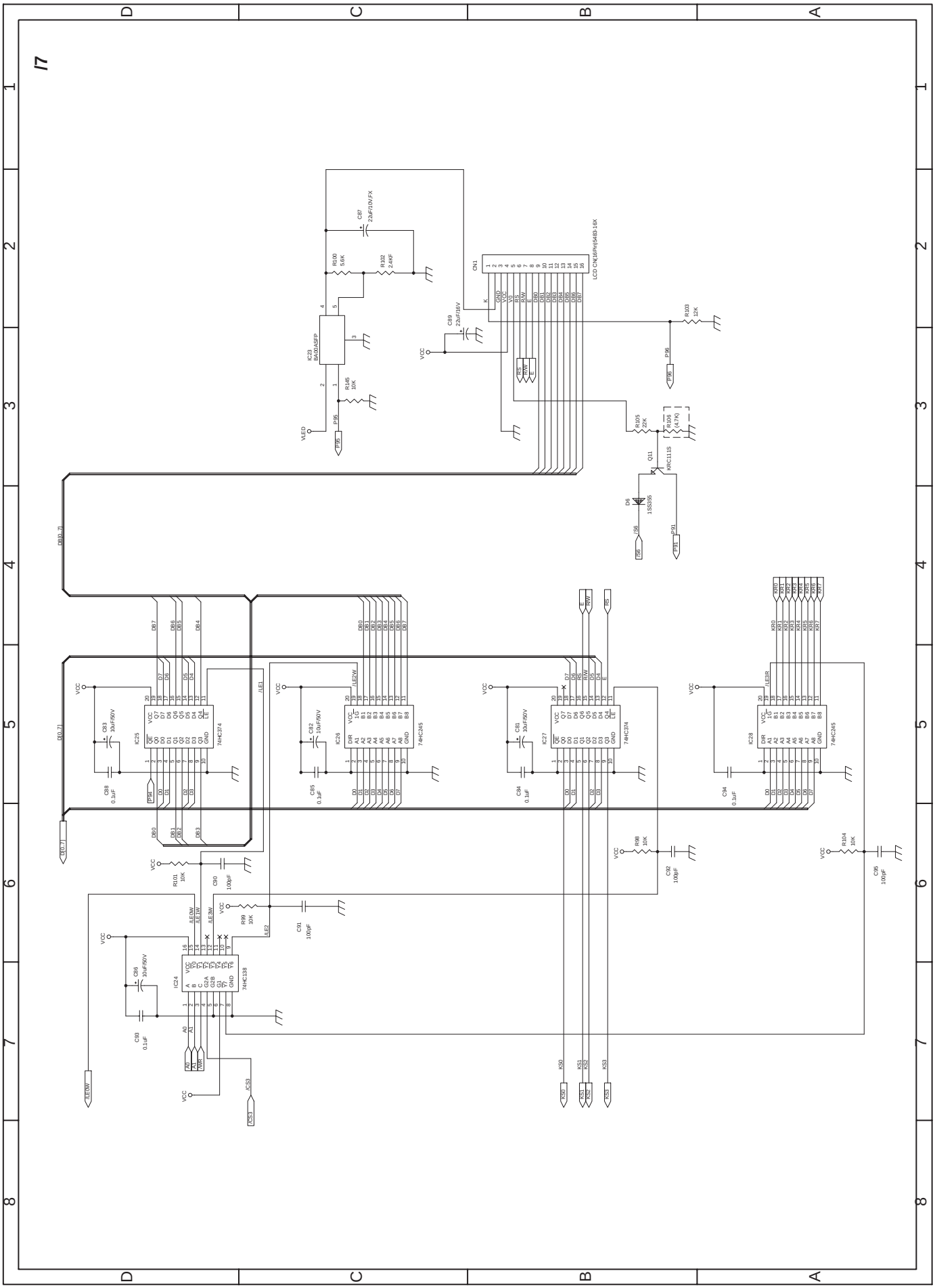


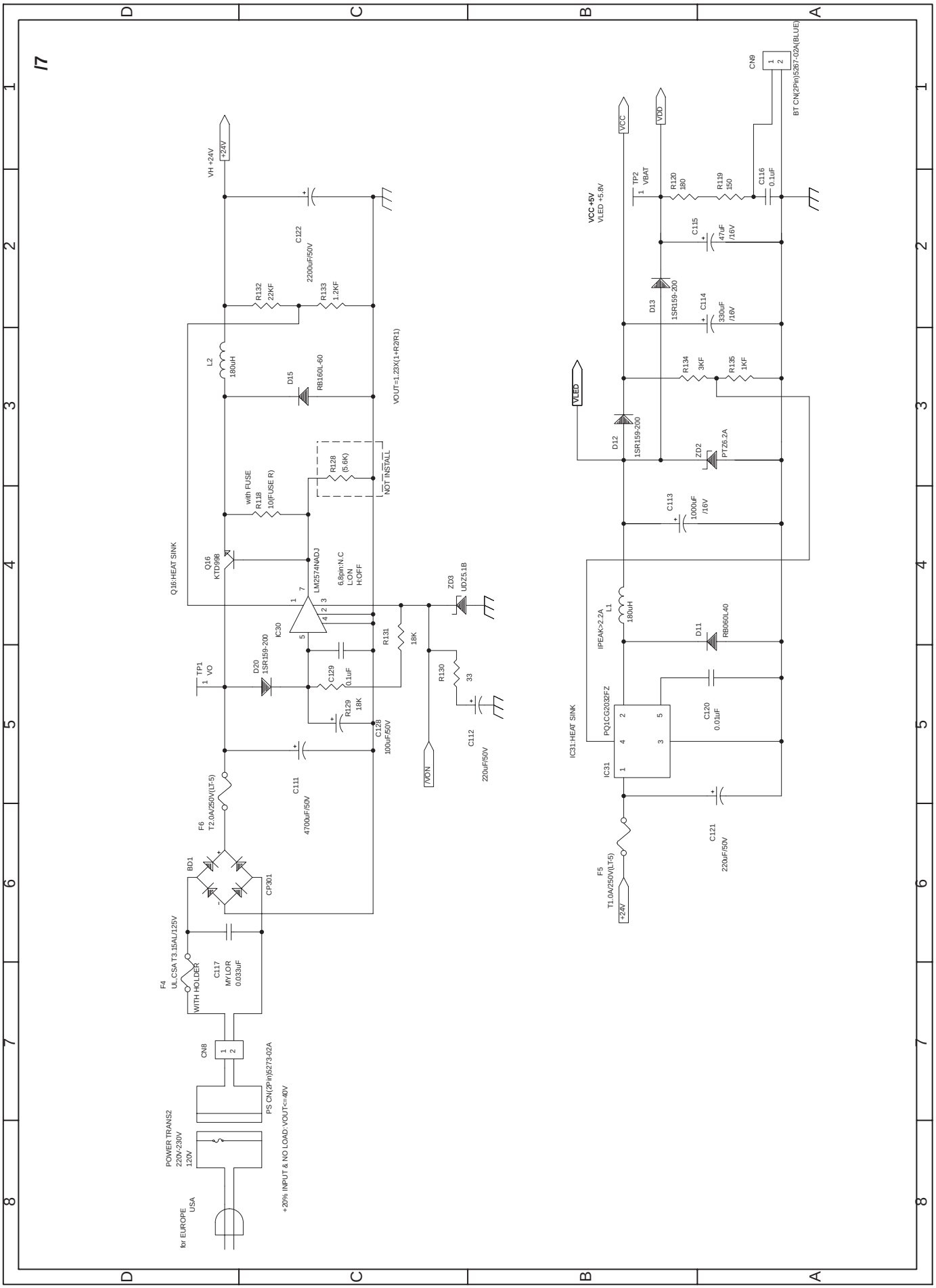


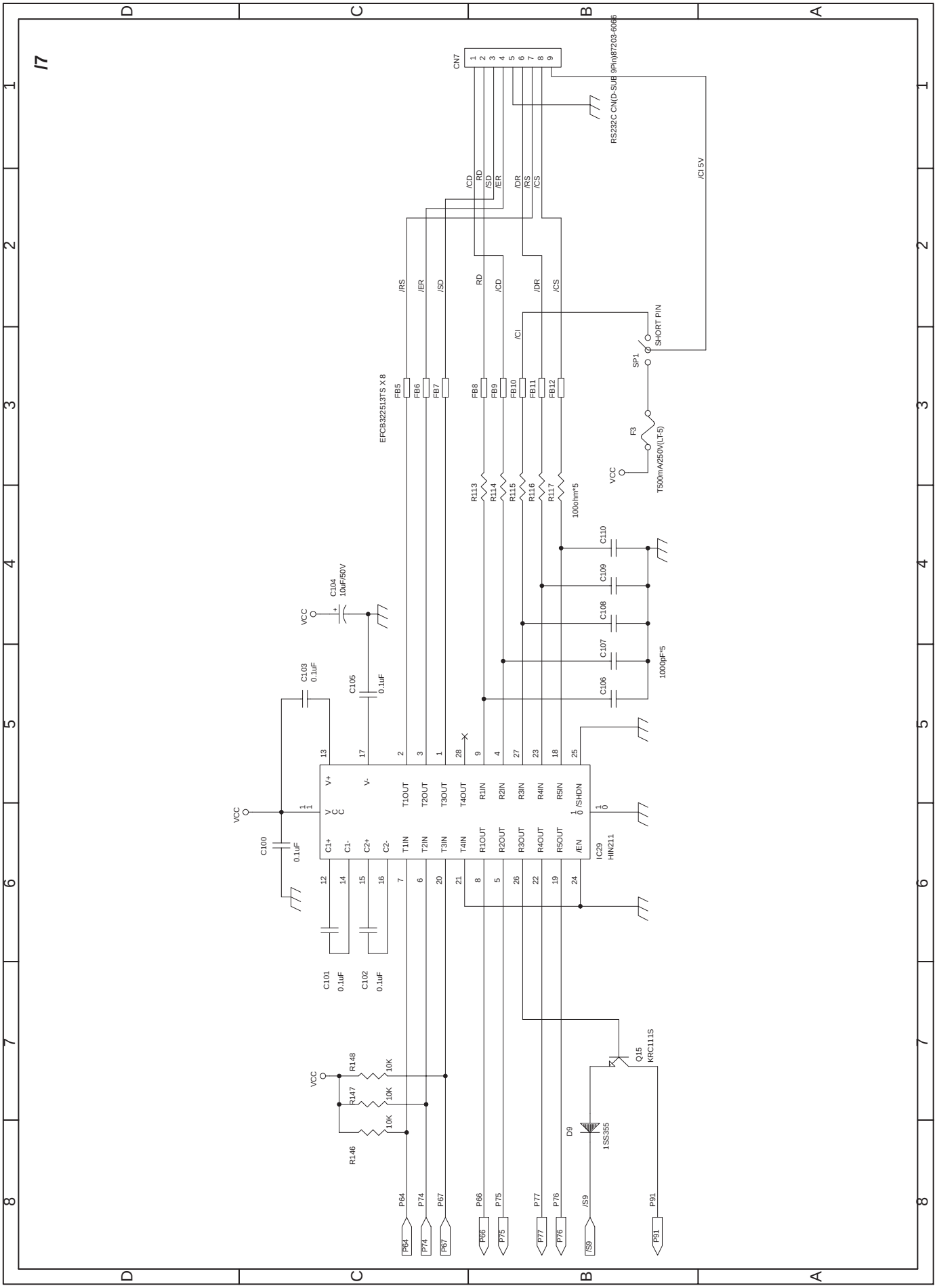
DRIVER PWB CIRCUIT

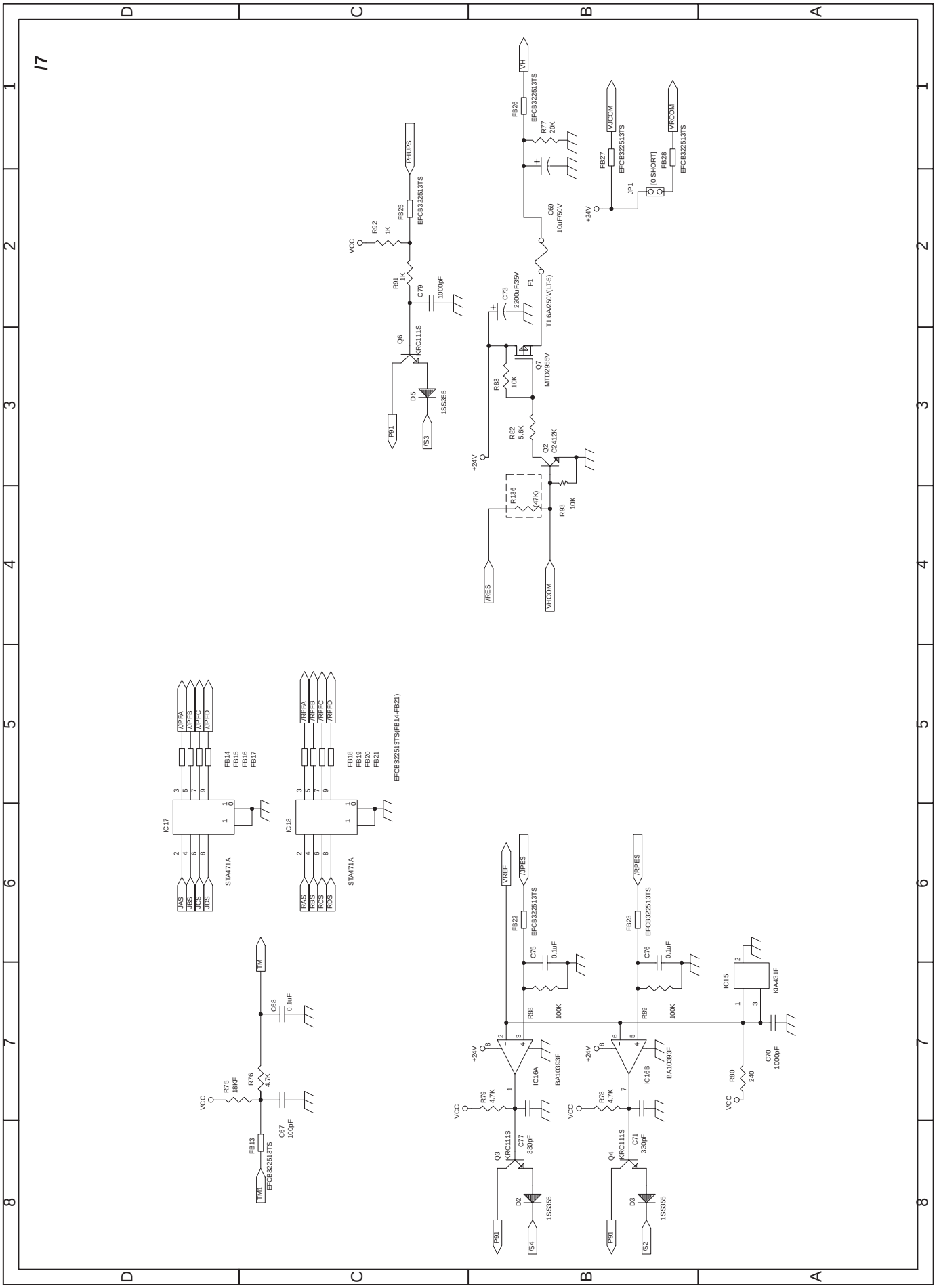
/7

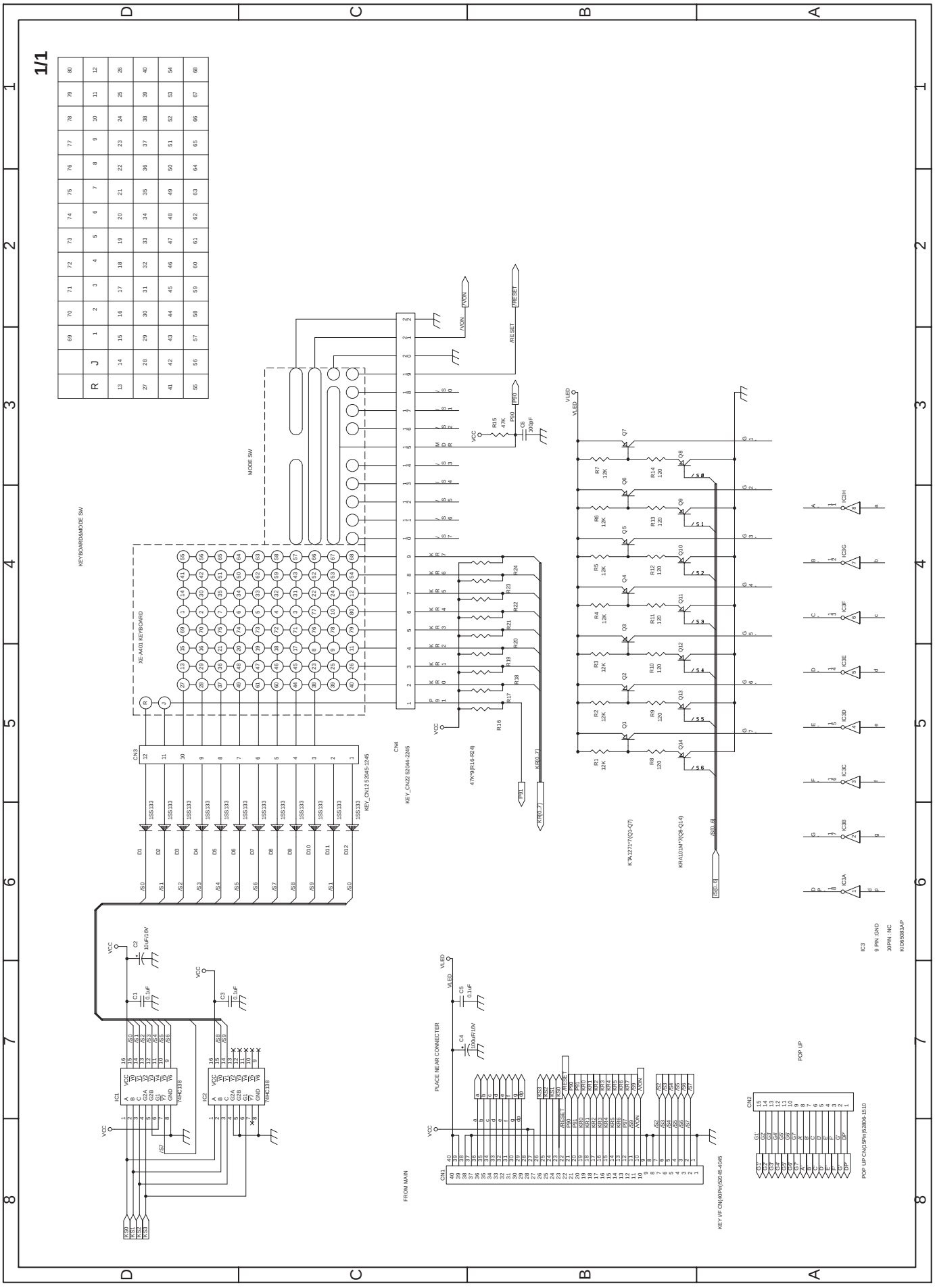

I7
C65
0.1uF
C64
10uF/50V
VCC
/RD
IC11
4M FLASH ROM LH28F004SUT-NC80
IC12
IC SOCKET(4MROM)
C63
0.1uF
/WR
/RES
D[0..7]
A[0..19]
/RAMCS
R144
10K
C127
150pF
VDD
IC9A
IC9B
IC9C
74LV11A
*IC9 7Pin:VDD 14Pin:GND
C66
0.1uF
R150
10K
R142
10K
S1
ROM COPY
IPL SW SSS312
IC13
74LV138A
C126
0.1uF
R149
10K
BA0
A19
/CS0
BA1
BAJ
IPLCON
IC33D
74LV00A
*IC33 7Pin:VCC 14Pin:GND
/POFF
C119
1000pF
IC32A
BA10393F
VLED
R127
2.7K
R126
56K
IC32B
BA10393F
R124
10KF
R123
9.1KF
R125
6.2KF
C118
(1uF/50V)
+24V
R122
3.9K
ZD1
UDZ5.1B
P-OFF


I7
CN1
LCD C*K(16Pin)5483-16X
IC23
BA03ASFP
IC24
74HC138
IC25
74HC374
IC26
74HC245
IC27
74HC374
IC28
74HC245
Q11
KRC111S
D6
1SS355
R105
22K
R106
(47K)
R103
12K
R100
5.6K
R102
2.4KF
R145
10K
R101
10K
R99
10K
R98
10K
R104
10K
C87
22uF/10VFX
C89
22uF/16V
C83
10uF/50V
C82
10uF/50V
C81
10uF/50V
C86
10uF/50V
C88
0.1uF
C85
0.1uF
C84
0.1uF
C94
0.1uF
C90
100pF
C91
100pF
C92
100pF
C95
100pF
C93
0.1uF
VCC
VLED
GND
RS
RW
E
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
D0
D1
D2
D3
D4
D5
D6
D7
KR0
KR1
KR2
KR3
KR4
KR5
KR6
KR7
KS0
KS1
KS2
KS3
/LE0W
/LE1W
/LE2W
/LE3R
/LE1
/LE2
A0
A1
PWR
/CS3
P95
P96
P90
P91


I7
VH +24V
+24V
C122
2200uF/50V
R132
22KF
R133
1.2KF
L2
180uH
D15
RB160L-60
VOUT=1.23X(1+R2/R1)
with FUSE
R118
10(FUSE R)
R128
(5.6K)
NOT INSTALL
Q16:HEAT SINK
Q16
KTD998
IC30
LM2574NADJ
6.8pin:N.C
L:ON
H:OFF
ZD3
UDZ5.1B
D20
1SR159-200
TP1
VO
C129
0.1uF
R131
18K
R130
33
R129
18K
C128
100uF/50V
C112
220uF/50V
/VON
C111
4700uF/50V
F6
T2.0A/250V(LT-5)
BD1
CP301
F4
UL,CSA T3.15AL/125V
WITH HOLDER
C117
MYLOR
0.033uF
CN8
PS CN(2P/n)5273-02A
POWER TRANS2
220/-230V
120V
for EUROPE
USA
+-20% INPUT & NO LOAD: VOUT<=40V
VCC +5V
VLED +5.8V
VCC
VDD
TP2
VBAT
R120
180
R119
150
C116
0.1uF
CN9
BT CN(2Pin)5267-02A(BLUE)
C115
47uF
/16V
D13
1SR159-200
C114
330uF
/16V
R134
3KF
R135
1KF
VLED
D12
1SR159-200
ZD2
PTZ6.2A
C113
1000uF
/16V
IC31:HEAT SINK
IPEAK=2.2A
L1
180uH
D11
RB060L40
IC31
PQ1CG2032FZ
C120
0.01uF
C121
220uF/50V
F5
T1.0A/250V(LT-5)
+24V


I7
CN7
RS232C CN(D-SUB 9Pin)87203-6066
/CD
RD
/SD
/ER
/DR
/RS
/CS
/CI 5V
SHORT PIN
SP1
F3
T500mA/250V(LF5)
VCC
EFCB322513TS X 8
FB5
FB6
FB7
FB8
FB9
FB10
FB11
FB12
R113
R114
R115
R116
R117
100ohm*5
C110
C109
C108
C107
C106
1000pF*5
C104
10uF/50V
C103
0.1uF
C105
0.1uF
C100
0.1uF
C101
0.1uF
C102
0.1uF
V+
V-
VCC
C1+
C1-
C2+
C2-
T1OUT
T2OUT
T3OUT
T4OUT
R1IN
R2IN
R3IN
R4IN
R5IN
/SHDN
T1IN
T2IN
T3IN
T4IN
R1OUT
R2OUT
R3OUT
R4OUT
R5OUT
/EN
IC29
HIN211
R148
R147
R146
10K
Q15
KRC111S
D9
1SS355
P64
P74
P67
P66
P75
P77
P76
/S9
P91

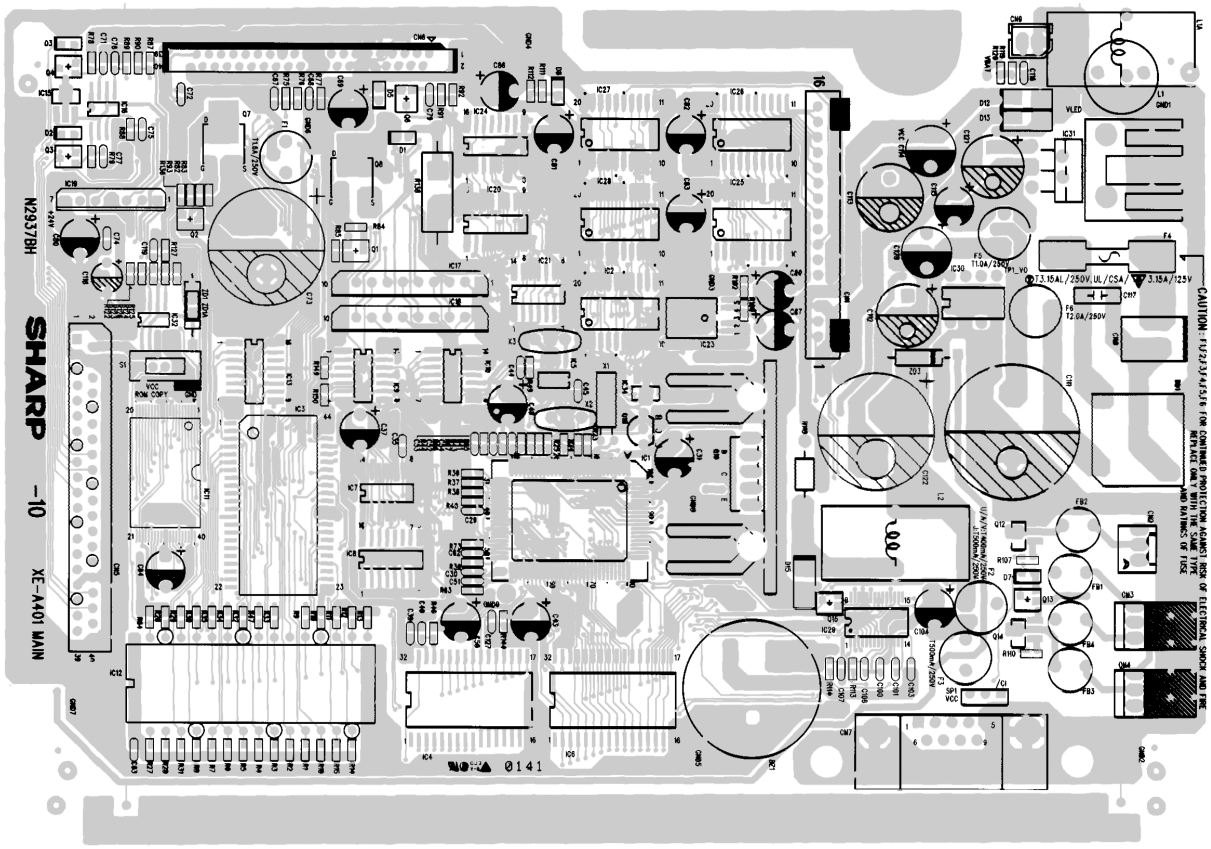

I7
VH
FB26
EFCB322513TS
R77
20K
C69
10uF/50V
VRCOM
FB27
EFCB322513TS
JP1
[0 SHORT]
FB28
EFCB322513TS
+24V
PHUPS
FB25
EFCB322513TS
VCC
R92
1K
R91
1K
C79
1000pF
Q6
KRC111S
D5
1SS355
P91
/S3
C73
2200uF/35V
F1
T1.6A/250V(LT5)
Q7
MTD2955V
R83
10K
R82
5.6K
Q2
C2412K
R136
(47K)
R93
10K
/RES
VHCOM
/JPFA
/JPFB
/JPFC
/JPFD
FB14
FB15
FB16
FB17
IC17
STA471A
JAS
JBS
JCS
JDS
/RPFA
/RPFB
/RPFC
/RPFD
FB18
FB19
FB20
FB21
EFCB322513TS(FB14-FB21)
IC18
STA471A
RAS
RBS
RCS
RDS
VREF
/JPES
FB22
EFCB322513TS
C75
0.1uF
R88
100K
/RPES
FB23
EFCB322513TS
C76
0.1uF
R89
100K
IC15
KIA431F
C70
1000pF
R80
240
IC16A
BA10393F
IC16B
BA10393F
R79
4.7K
R78
4.7K
Q3
KRC111S
C77
330pF
D2
1SS355
/S4
Q4
KRC111S
C71
330pF
D3
1SS355
/S2
TM
C68
0.1uF
R75
18KF
R76
4.7K
C67
100pF
FB13
EFCB322513TS
TM1


1/1
KEYBOARD&MODE SW
XE-A401 KEYBOARD
MODE SW
CN3
CN4
KEY_CN12 5DD44-2245
KEY_CN12 53045-1245
47K*9(R16-R24)
R16
R17
R18
R19
R20
R21
R22
R23
R24
P50
P51
K50
K51
K52
K53
K54
K55
K56
K57
K58
K59
K60
K61
K62
K63
K64
K65
K66
K67
K68
K69
K70
K71
K72
K73
K74
K75
K76
K77
K78
K79
K80
K81
K82
K83
K84
K85
K86
K87
K88
K89

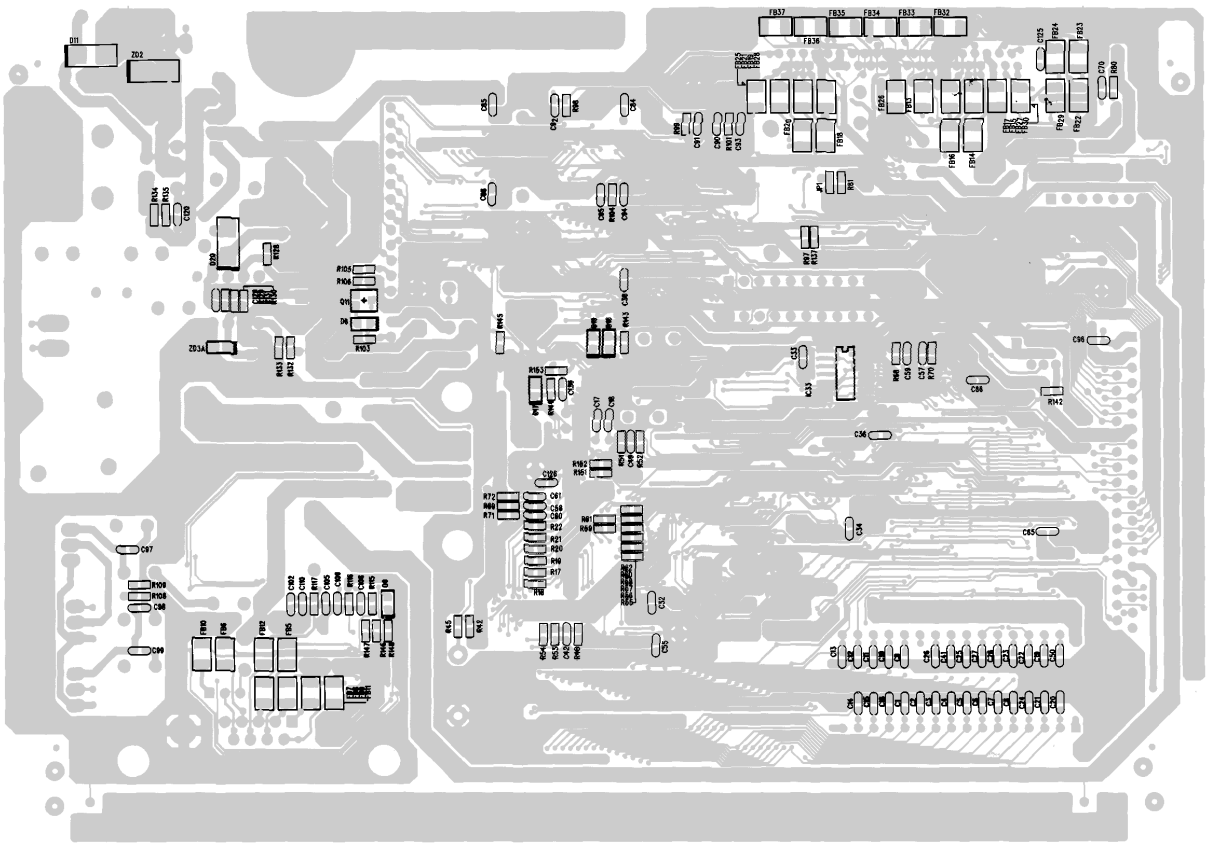
PWB LAYOUT

1. MAIN PWB LAYOUT

A. side



B. side



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